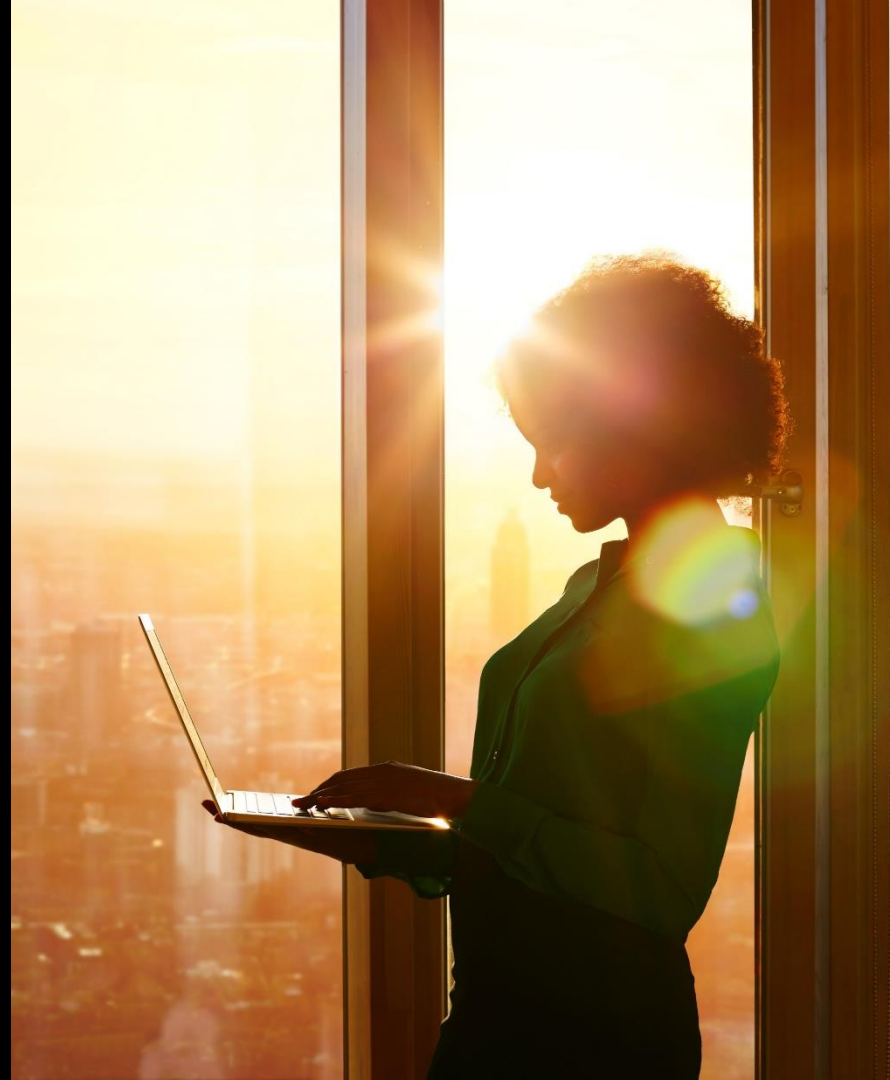


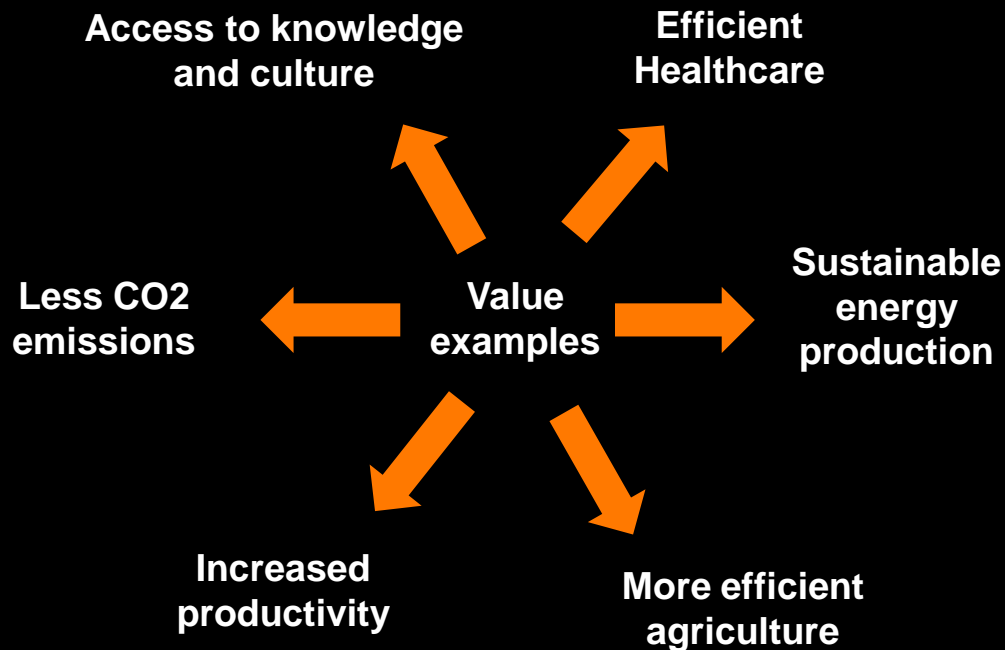
The environmental sustainability of 6G



Eric Hardouin
11 July 2023

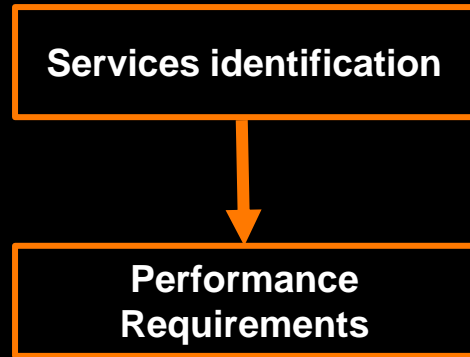


6G needs to be designed to **bring value to society and to be sustainable**

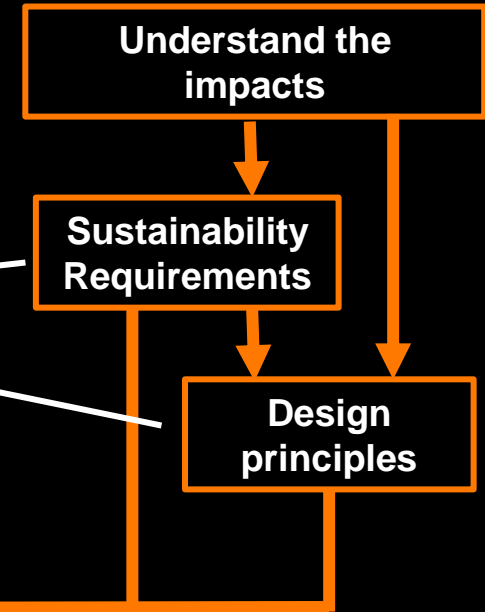


How to design a system for value and sustainability?

Identifying value-enabling services



Designing a sustainable system



How to quantify value? the Key Value Indicators (KVIs) approach

Examples of KVIs, from “What values should 6G address?” 6G-IA White Paper, May 2022 ([link](#))

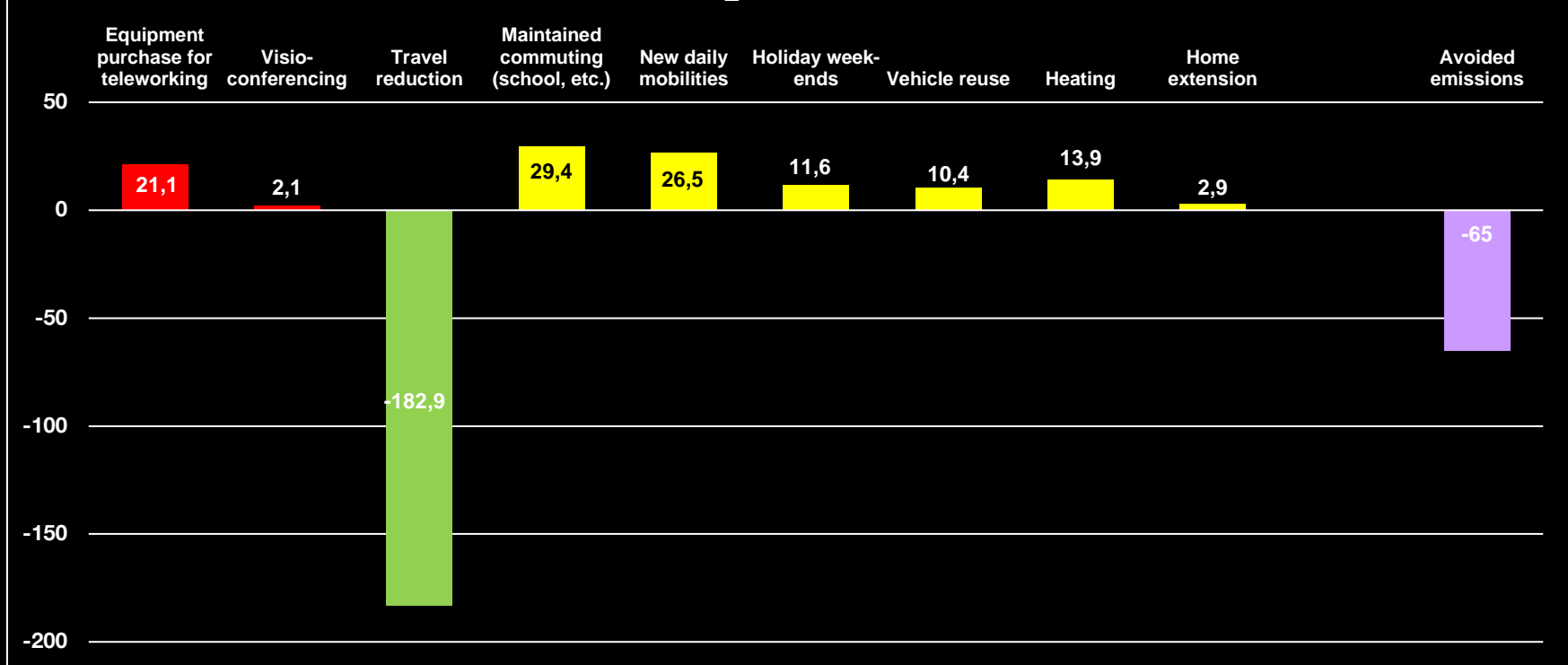
Use case area	KV examples	KVI examples
Smart city with urban mobility	Environmental sustainability	Environmental footprint of urban transport of persons and goods
	Personal health and protection from harm	Injuries in urban traffic
Personal health monitoring & actuation everywhere	Privacy and confidentiality	Reported user control of medical data for storage/transmission/processing
	Societal sustainability	Average cost saving in health care system per patient
	Trust	Reported trust level for autonomous e-health components; Accuracy rate in e-health AI-related events' identification and/or decision making
Living and working everywhere	Societal sustainability	Travelling / commuting time reduction; Access to job market; Life opportunities in rural areas
	Economical sustainability and innovation	Cost-efficiency of living and working in rural areas; Number of activities that can be performed anywhere
	Digital inclusion	Access to internet in communities and areas
Sustainable food production	Environmental sustainability	Environmental footprint of agriculture activities; Energy use in agricultural activities
	Societal sustainability	Increase in agriculture productivity; Reliability of food production

Standardized evaluation method for CO2 emissions reduction enablement:

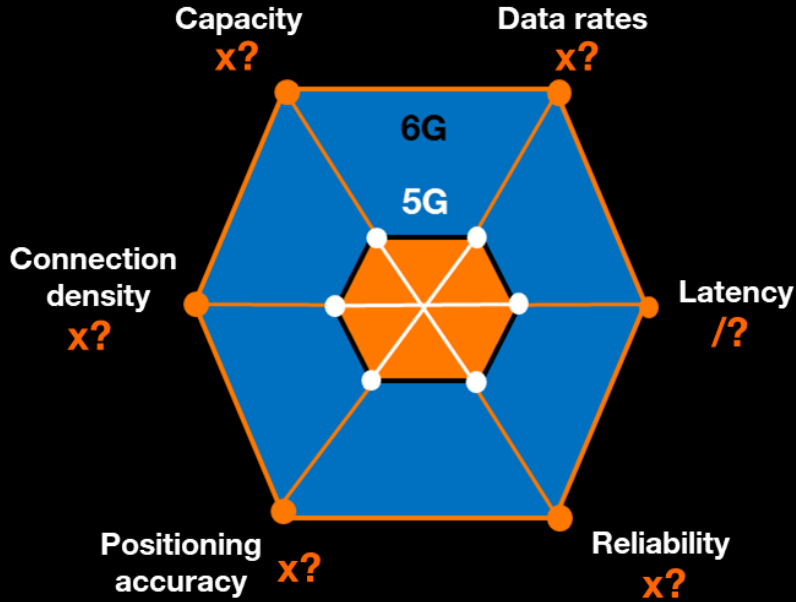
ITU-T L.1480: Enabling the Net Zero transition: Assessing how the use of information and communication technology solutions impact greenhouse gas emissions of other sectors

Assessing how the use of teleworking impacts greenhouse gas emissions: a study case in Orange Atalante, based on ITU-T L.1480 (Labidurie, Bêlorgey et al, EUCNC & 6G Summit 2023)

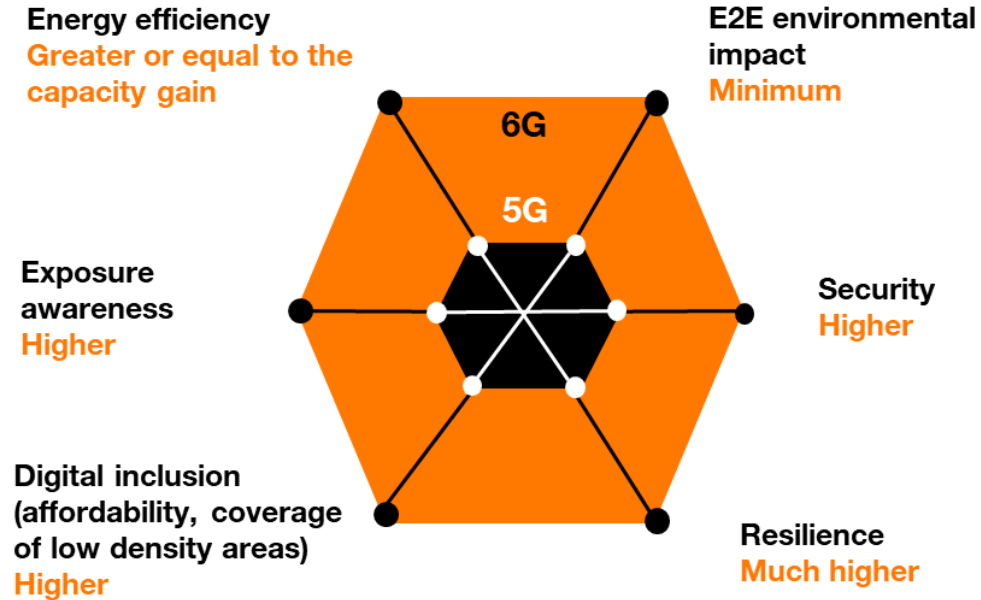
Results: carbon emissions (tCO₂e per year), effect by effect



6G requirements to be driven by value enablement and sustainability



Performance requirements to be set taking into account the enabled value.
Be careful on not creating false expectations



Societal requirements:
Research challenges to define **common indicators and methodologies** to evaluate them

Thank you!